

ABSTRACT

The present invention relates to methods for high information content (HIC) analysis or screening of complex biological systems using Fourier transform mass spectrometry (FTMS). The present methods are useful for analyzing complex biological mixtures containing both high molecular weight molecules (*e.g.*, polynucleotides, proteins, polysaccharides) and low molecular weight molecules (*e.g.*, oligonucleotides, peptides, lipids, oligosaccharides, steroid hormones, catabolic and metabolic intermediates) permit the elucidation of molecular differences between complex biological samples, and permit the identification of biologically active molecules (*e.g.* therapeutically active drugs, etc.).